

# Plastic Clad Silica (Low OH)

Fiberguide Industries

Anhydroguide™ PCS

## Technical Data

### REFERENCE SUMMARY

**Product Category:**  
Fiber

**Mode:**  
Step Index, Multimode

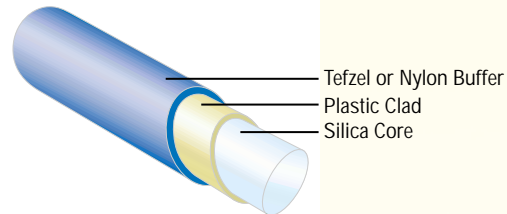
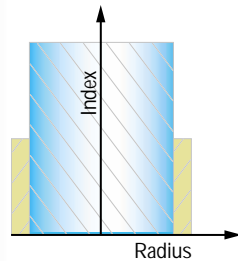
**Type:**  
Plastic Clad Silica (Low OH)

**Trade Name:**  
Anhydroguide™ PCS  
VIS-IR

### DESCRIPTION

When looking for a low cost fiber with a high numerical aperture (N.A.) for more efficient light coupling, the Anhydroguide™ PCS is the fiber of choice. With an N.A. of 0.37 and a plastic cladding that allows a high core-to-clad ratio, satisfies those requirements and more. The pure fused silica ( $\text{SiO}_2$ ) used in the core of the Anhydroguide™ fiber is made by reacting silicon tetrachloride ( $\text{SiCl}_4$ ) with oxygen ( $\text{O}_2$ ) using a plasma arc rather than an oxy-hydrogen flame. This ensures that the residual hydroxyl concentration (OH) will be low in the core material resulting in superior infrared transmission as compared with flame prepared silica that is used in the companion product, Superguide™ which has superior ultraviolet (UV) transmission.

### FIBER CROSS SECTION



### FEATURES & BENEFITS

Features	Benefits
• Plastic cladding.	• Protects the fiber during buffer stripping to prevent fiber breakage.
• Large numerical aperture (N.A.).	• 43° full angle provides efficient light coupling, and exceptional transmission in tight bends.
• Plastic clad.	• Protects the fiber during buffer stripping to prevent fiber breakage. • Increases fiber strength and reduces static fatigue in humid environments.
• Superior concentricity and core-to-clad ratio.	• Allows for excellent connector alignment, fiber core positioning, and high transmission bundles.
• Broad operating wavelength range.	• Excellent for Diode Laser (800-900nm), Erbium Laser (1540nm), and Holmium Laser (2100nm).
• Sterilizeable by ETO or gamma.	• Single use or reusable medical devices.
• Hard polymer cladding is removable with acetone.	• Enables low-cost, highly reliable custom end designs.
• All dielectric, non-magnetic construction.	• Metal free.
• All materials certified by NAMS to USP Class VI for non-toxicity and biocompatibility.	• Accelerated 510K for single use or reusable medical devices.



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### APPLICATIONS

#### Sensors/Industrial Controls/Illumination

- Make/Break
- Distance
- Temperature
- Liquid level
- Proximity
- Chemical analysis
- Biotechnology

#### Industrial/Scientific Diagnostic Instrumentation/Devices

- Spectrophotometer
- Gas/liquid chromatography
- Flame pyrometer
- Cytometry
- DNA sequencing

#### Medical/Dental

- HO:YAG Laser (2070nm)
  - Orthopedics for arthroscopy
  - Urology for lithotripsy
  - ENT for endoscopic sinus surgery
  - Spine surgery for endoscopic disc removal
  - Prostate removal (TURP)
- ER:YAG Laser (2940nm)
  - Dental
  - Tissue ablation
- Nd:YAG Laser (1064nm)
  - Hair removal

- Diode Laser (800-900nm)
  - Hair removal
  - Periodontal surgery
  - Treatment of leg and facial veins
- Variable Pulse YAG Laser (1064nm)
  - Skin resurfacing
  - Surgery and treatment of benign, pre-malignant and multiple pathologic skin conditions.

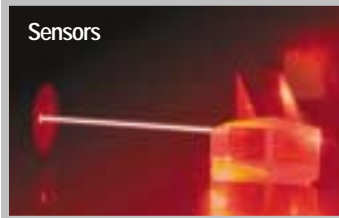
#### Short-haul Data Transmission

- In-plant systems

#### Ordnance Initiation

- Carries signal for launch/detonation

### TYPICAL EXAMPLES



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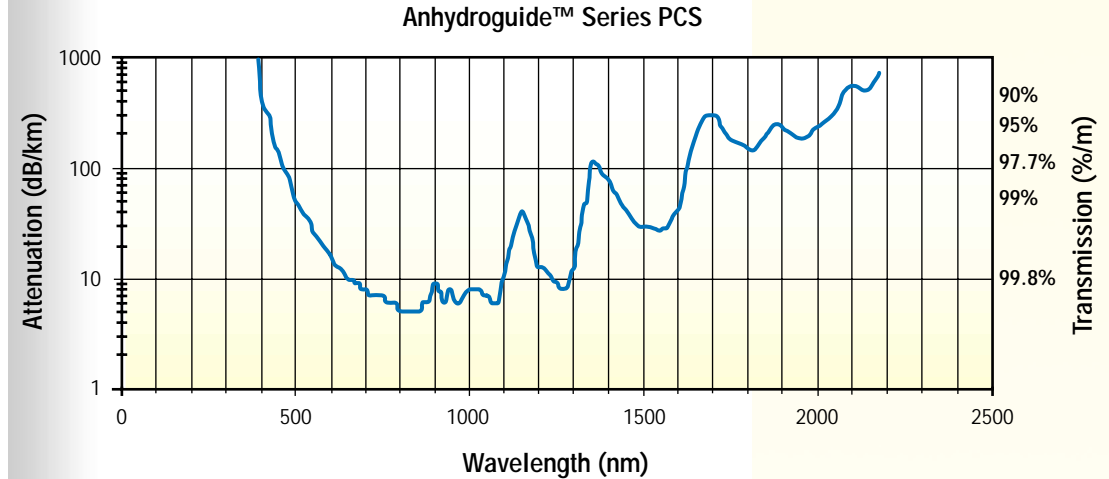
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### SPECTRAL ATTENUATION (Typical)



### FIBER SPECIFICATIONS

- Standard Buffer Coating:  
Tefzel® 750 Clear, Natural Nylon
- Numerical Aperture:  
0.37 (up to 2 meter length\*)  
Full Acceptance Angle 43°  
0.23 (over 50 meter length\*)  
Full Acceptance Angle 27°
- Typical Attenuation:  
5dB/km @ 810nm  
6dB/km @ 1064nm  
541dB/km @ 2100nm
- Temperature Operating Range:  
Nylon: -40°C to + 100°C  
Tefzel®: -40°C to + 200°C
- Recommended Bend Radius:  
Short Term: 100 x Clad Diameter  
Long Term: 240 x Clad Diameter
- Proof Test Using Bend Method

\*The theoretical numerical aperture for Plastic Clad Silica Fibers, as calculated from the refractive indices of the core and cladding materials, only persists for short fiber lengths, guided light rays near to the maximum acceptance angle are selectively attenuated by the cladding material so that a somewhat reduced effective or "steady state" numerical aperture governs transmission for distances over 50 meters.

**Note:** The fibers in the following tables carry a designation "APC" standing for "Anhydroguide Series Plastic Clad", followed by the core and cladding diameters (in microns) and concluding with the suffix "N" that designates natural Nylon buffer and suffix "Z" that designates clear Tefzel® buffer.



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### FIBER SPECIFICATIONS - NYLON BUFFER

Product Code	APC200/300N	APC300/400N
Core Diameter	200µm ± 2%	300µm ± 2%
Clad Diameter	300µm ± 2%	400µm ± 2%
Buffer Diameter Nylon	370µm ± 5%	500µm ± 5%

Product Code	APC400/500N	APC600/700N	APC800/900N
Core Diameter	400µm ± 2%	600µm ± 2%	800µm ± 2%
Clad Diameter	500µm ± 2%	700µm ± 2%	900µm ± 2%
Buffer Diameter Nylon	600µm ± 5%	800µm ± 5%	1000µm ± 5%

Product Code	APC1000/1100N	APC1500/1650N	APC2000/2150N
Core Diameter	1000µm ± 2%	1500µm ± 2%	2000µm ± 2%
Clad Diameter	1100µm ± 2%	1650µm ± 12%	2150µm ± 2%
Buffer Diameter Nylon	1200µm ± 5%	1800µm ± 5%	2300µm ± 5%

### FIBER SPECIFICATIONS - TEFZEL® BUFFER

Product Code	APC200/300Z	APC300/440Z	APC400/550Z
Core Diameter	200µm ± 2%	300µm ± 2%	400µm ± 2%
Clad Diameter	300µm ± 2%	440µm ± 2%	550µm ± 2%
Buffer Diameter Tefzel®	450µm ± 5%	660µm ± 5%	850µm ± 5%

Product Code	APC600/750Z	APC800/950Z	APC1000/1150Z
Core Diameter	600µm ± 2%	800µm ± 2%	1000µm ± 2%
Clad Diameter	750µm ± 2%	950µm ± 2%	1150µm ± 2%
Buffer Diameter Tefzel®	1010µm ± 5%	1400µm ± 5%	1650µm ± 5%

### Fiberguide Industries Customization Program

Fiberguide Industries is a full service custom fiber and value-added assembly provider. If you have unique requirements, please contact us to discuss tailoring a product or design to optimize optical performance for your specific application.

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